



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,195	01/23/2004	Charles K. Heizer	71044-006CIPN2	8068
29493	7590	06/15/2004	EXAMINER	
HUSCH & EPPENBERGER, LLC 190 CARONDELET PLAZA SUITE 600 ST. LOUIS, MO 63105-3441			TRIEU, THERESA	
		ART UNIT		PAPER NUMBER
				3748

DATE MAILED: 06/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/764,195	HEIZER, CHARLES K.
Examiner	Art Unit	
Theresa Trieu	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) 15-20 is/are allowed.
- 6) Claim(s) 1-6, 11 and 12 is/are rejected.
- 7) Claim(s) 7-10, 13 and 14 is/are objected to.
- 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date Jan. 23, 2004.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_.

## DETAILED ACTION

### *Specification*

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: “a male rotor..having a length less than twice the pitch of the helical thread” recited in claims 15 and 20.

### *Claim Objections*

2. Claim 1 is objected to because of the following informalities: page 13, line 10, “said male rotor” should be changed to --female rotor --. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claims 1-3, 5, 6 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Toyoshima et al. (Toyoshima) (Patent Number 5,120,208).***

Regarding claims 1-3, as shown in Figs. 1 and 2, Toyoshima discloses a screw device for positive displacement of a working fluid, comprising:

a housing (1) having an inlet (20) at a first end and an outlet port (21) at a second end and a pair of cylindrical bores (not numbered; however, clearly seen in Figs 1 and 2);  
a female rotor (4) having a helical groove (2A) and having a periphery in close tolerance with the housing;

a male rotor (7) having a helical thread (3A), the helical thread having a profile comprising a minor diameter arc and a tooth segment radially extending to a major diameter arc, wherein the helical thread intermeshed in phase with the helical groove and the male rotor is in close tolerance with the housing, and wherein the helical thread and the helical groove bound a space within the cylindrical bores, seal the working fluid within in the housing, and transition (not numbered; however, clearly seen in Fig. 1) between meshing with each other (2A, 3A) and sealing around the housing (1) while maintaining the sealing of the working fluid in the space; the transmission comprising a small gap and the small gap being within the close tolerance (see Fig. 2).

Regarding claims 5, 6 and 11, Toyoshima discloses the helical thread and the helical groove intermesh at the inlet (20) and close off the spaces from the inlet to seal the working fluid in the housing; the male rotor (7) being rotatably mounted an axis extending between the first and second ends of the housing (1) and wherein the profile being identical shaped in each plane perpendicular to the axis and passing through the male rotor (7) at axial locations between the first and second ends of the housing (7); a plurality of threads (3A) and an equal plurality of grooves (2A).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**4. *Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toyoshima '208 in view of Boris (Patent Number 3,557,687).***

Toyoshima discloses the invention as recited above; however, Toyoshima fails to disclose length of the male and female rotors.

As shown in Fig. 2, Boris teaches that it is conventional in the art to utilize the male (2) and female rotor (3) having a length equal to a single pitch of the helical thread and the helical groove, respectively. It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the length of male/female rotor, as taught by Boris in the Toyoshima apparatus, since the use of thereof would have limited the rotation between of the male and female rotors.

**5. *Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toyoshima '208 in view of Rathman (Patent Number 2,656,972).***

Toyoshima discloses the invention as recited above; however, Toyoshima fails to disclose a valve at the outlet port.

As shown in Figs. 1 and 2, Rathman teaches that it is conventional in the art to utilize the valve (61) operatively communicating with the outlet port (23, 26). It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the length of the valve as taught by Rathman in the Toyoshima apparatus, since the use of thereof would have controlled the flow rate.

***Allowable Subject Matter***

6. Claims 7-10, 13 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
7. Claims 15-20 are allowed.

***Prior Art***

The IDS (PTO-1449) filed on January 23, 2004 has been considered. An initialized copy is attached hereto.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of three patents.

Sennet (Patent Number 3,086,474) discloses a screw pump.

Kirsten (Patent Number 6,102,683) discloses a compressor installation having water injection and a water treatment device.

Dieterich (Patent Number 6,364,645) discloses a screw compressor having compressor screw housing and a spaced outer housing.

***Communication***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Theresa Trieu whose telephone number is 703-308-6434. The examiner can normally be reached on Monday-Thursday 7:30am- 6:00pm - Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E Denion can be reached on 703-308-2623. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 3748

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TT



Theresa Trieu

Patent Examiner

Art Unit: 3748